

Appl. No. 10/792,015
Amdt. Dated March 27, 2006
Reply to Office Action of November 25, 2005

AMENDMENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A five layer shrink film for high speed packaging lines having a modulus of 50,000 psi or higher and a haze value less than 5.0 comprising:
 - a first outer layer comprising by total weight of the layer, 60% or more by weight polyethylenic polymer that has been formulated for use as outer layers in high speed packaging shrink film and further comprises 5% to 15% by weight softening olefin and 10% to 30% by weight cyclic-olefin copolymers;
 - a second outer layer comprising by total weight of the layer, 60% or more by weight polyethylenic polymer that has been formulated for use as outer layers in high speed packaging shrink film and further comprises 5% to 15% by weight softening olefin and 10% to 30% by weight cyclic-olefin copolymers;
 - a core cyclic-olefin copolymer containing layer;
 - a first cyclic-olefin copolymer containing intermediate layer between the core layer and the first outer layer; and
 - a second cyclic-olefin copolymer containing intermediate layer between the core layer and the second outer layer;

wherein the polyethylenic polymer comprises linear low density polyethylene copolymer;

wherein the cyclic-olefin copolymer of the five layer shrink film is a single-site catalyzed cyclic-olefin copolymer;

wherein softening olefin copolymer comprises by total weight of the five layer shrink film from 2% to 25%;

wherein the cyclic-olefin copolymer comprises by total weight of the five layer shrink film from 10% to 30%; and

wherein the five layer shrink film comprises less than 1% by weight polystyrene and less than 1% by weight polypropylene.

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2. (Currently amended) The film of claim 1 wherein the ~~polyethylenic polymer~~ is linear low density polyethylene copolymer ~~and~~ comprises 1 to 10 weight percent 1-octene monomer.
3. (Original) The film of claim 1 having a thickness between 0.30 and 2.0 mils.
4. (Previously presented) The film of claim 1 wherein the first outer layer comprises from 10% to 20% of the total weight of the film; wherein the second outer layer comprises from 10% to 20% of the total weight of the film; wherein the core layer comprises from 30% to 60% of the total weight of the film, wherein the first intermediate layer comprises from 10% to 20% of the total weight of the film; and wherein the second intermediate layer comprises from 10% to 20% of the total weight of the film.
5. (Original) The film of claim 1 cross-linked using a radiation source.
6. (Original) The film of claim 5 wherein the radiation source is active on the first collapsed tube of a double-bubble film orientation process.
7. (Original) The film of claim 5 wherein the radiation source is active on the film subsequent to full biaxial orientation.
8. (Currently amended) A three layer shrink film for high speed packaging lines having a modulus of 50,000 psi or higher and a haze value less than 5.0 comprising:
 - a first outer layer comprising by weight 75% to 95% linear low density polyethylene, from 01% to 15% cyclic-olefin copolymer and from 51% to 25% softening olefin copolymer;
 - a second outer layer comprising by weight 75% to 95% linear low density polyethylene, from 01% to 15% cyclic-olefin copolymer and from 51% to 25% softening olefin copolymer;
 - a core cyclic-olefin copolymer containing layer;
 - wherein the cyclic-olefin copolymer of the three layer shrink film is a single-site catalyzed cyclic-olefin copolymer;
 - wherein softening olefin copolymer comprises by total weight of the three layer shrink film from 2% to 25%;
 - wherein the cyclic-olefin copolymer comprises by total weight of the three layer shrink film from 10% to 30%; and

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wherein the three layer shrink film comprises less than 1% by weight polystyrene and less than 1% by weight polypropylene.

9. (Original) The film of claim 8 wherein the linear low density polyethylene copolymer comprises 1 to 10 weight percent 1-octene monomer.
10. (Original) The film of claim 8 having a thickness between 0.30 and 2.0 mils.
11. (Original) The film of claim 8 wherein the first outer layer comprises from 10% to 20% of the total weight of the film; wherein the second outer layer comprises from 10% to 20% of the total weight of the film; and wherein the core layer comprises from 60% to 80% of the total weight of the film.
12. (Original) The film of claim 8 crosslinked using a radiation source.
13. (Original) The film of claim 12 wherein the radiation source is active on the first collapsed tube of a double-bubble film orientation process.
14. (Original) The film of claim 12 wherein the radiation source is active on the film subsequent to full biaxial orientation.
15. (Original) A method of forming the film of claim 1, the method comprising of: feeding individual layer compositions into 3 or more separate extruders; extruding the compositions simultaneously into a biaxial film orienting means; and biaxially orienting the film to a thickness of 30 to 200 gauge; wherein a separate extruder extrudes a single homogenous composition.
16. (Original) The method of claim 15 wherein the biaxial film orienting means consists of a double-bubble film orienting process.
17. (Original) The method of claim 15 further comprising the step of crosslinking the layers by exposing the layers to radiation dosage.
18. (Original) The method of claim 17 wherein the radiation dosage is active on the film subsequent to full biaxial orientation.
19. (Original) The method of claim 16 further comprising the step of crosslinking the layers by exposing the layers to radiation dosage.
20. (Original) The method of claim 19 wherein the radiation dosage is active on the first collapsed tube of a double-bubble film orientation process.
21. (Original) A method of forming film of claim 8, the method comprising of:

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feeding individual layer compositions into 2 or more separate extruders;
extruding the compositions simultaneously into a biaxial film orienting means; and
biaxially orienting the film to a thickness of 30 to 200 gauge;
wherein a separate extruder extrudes a single homogenous composition.

22. (Original) The method of claim 21 wherein the biaxial film orienting means consists of a double-bubble film orienting process.
23. (Original) The method of claim 21 further comprising the step of crosslinking the layers by exposing the layers to radiation dosage.
24. (Original) The method of claim 23 wherein the radiation dosage is active on the film subsequent to full biaxial orientation.
25. (Original) The method of claim 22 further comprising the step of crosslinking the layers by exposing the layers to radiation dosage.
26. (Original) The method of claim 25 wherein the radiation dosage is active on the first collapsed tube of a double-bubble film orientation process.